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U. S. DEPARTMENT OF AGRICULTURE,

BUREAU OF ENTOMOLOGY—BULLETIN No. 124.

L. O. HOWARD, Entomologist and Chief of Bureau.

THE ROSE SLUG-CATERPILLAR.

BY

F. H. CHITTENDEN, Sc. D.,

In Charge of Truck Crop and Stored Product Insect Investigations.

Issued October 31, 1913.

WASHINGTON:
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THE ROSE SLUG-CATERPILLAR.

(*Euclea indetermina* Boisd.)

INTRODUCTION.

It is only within comparatively recent years that the slug-like caterpillar, *Euclea indetermina* Boisd., has been known to injure the rose. In August, 1905, the Bureau of Entomology received two reports of attack to the foliage of rosebushes by this species. The insect has, however, been previously observed to have this food habit.

August 15, 1905, Dr. A. D. Hopkins furnished specimens of the larva from Kanawha Station, W. Va., stating that a dozen or more individuals could be found feeding on the leaves of a single rosebush. By August 20 the specimens received had transformed to pupæ. During the last week of August the same species, accompanied by specimens of both the penultimate and last stages, was received from Mr. S. D. Nixon, with report that it was injuring roses at Baltimore, Md.

The rose slug-caterpillar has been figured and described in its various stages, but is not a common species and, therefore, not well known. It is, however, strongly and attractively marked and very interesting in its transformations, resembling in some particulars the more common and related saddle-back caterpillar ([*Empretia*] *Sibine stimulea* Clem.). The accompanying illustration (fig. 1), notes, and brief descriptions have been brought together as of interest to rose growers and also to nurserymen, for the caterpillars also attack young trees and shrubs. It is in the last two stages of its larval existence that this species attracts most attention. The moth which it produces is less often seen.

THE MOTH.

In its adult stage this insect is nearly as attractive as the larva. Its coloration is unusual in the boreal American fauna. The general color is pale cinnamon brown; the forewings are darker and crossed diagonally by a green band, which occupies more than half the wing, leaving a wide border of darker brown and an inner or basal area of the same color and of the form shown in figure 1, *a*. The hind wings and the underside of the wings are nearly uniform pale brown, as is also the body, except on the edges of the wings and the tip of the abdomen. The thorax is like green plush. The wing

expanse of the male is generally a little less than an inch; of the female, a little more.

The moth closely resembles (*Parasa*) *Euclea chloris* H.-S., for which it has often been mistaken.[1]

THE EGG.

The egg is described by Dr. H. G. Dyar as follows:

Singly, or in small groups, slightly imbricated. Elliptical, flattened, translucent pale ochre-yellow on glass, 1.5 by 9 mm.; reticulations obscure, possibly only in a strong light, rounded hexagonally, nearly linear, somewhat irregular. No special characters. They hatch in nine days.

THE LARVA.

The following is descriptive of the larval forms received from West Virginia and Maryland, but according to other describers the general color varies from red to sulphur-yellow.

The penultimate stage.—In the penultimate stage the larva closely resembles the mature form, but the prominent spine-bearing processes are paler and less reddish, being chiefly of a dull lemon-yellow color, with the exception of the small lateral spiny tufts, which are orange at the base. Between the third and fourth processes the dorso-lateral stripes are distinctly carmine. The length of the slug-caterpillar at this stage is about half an inch or a little more.

The full-grown larva.—The full-grown larva looks very unlike any common species with which it could be compared, but in the general arrangement of its spines it resembles *Sibine stimulea.* Its form is similar, but the general impression as to color is orange, which is the color of the principal spine-bearing processes, of which there are seven pairs, as follows: Two in front, two behind, one pair in the middle, a shorter pair proceeding from the first thoracic segment just above the head, and the seventh pair proceeding from the second thoracic segment on each side. There is a dorso-lateral vermilion-scarlet stripe bearing six pairs of moderately long spinous processes and four rosette-like spinous tufts. There is also a lateral red stripe and a sublateral red stripe bearing nine rosette-like spinous tufts. The thin violet or mauve lines, in the middle of the back, as shown in figure 1, *c*, alternate with white. The length is about three-fourths of an inch.

THE PUPA AND COCOON.

The pupa (fig. 1, *f*) is so similar to that of *Sibine stimulea* that a detailed description is not necessary for present purposes. It is a trifle smaller than the latter, and in its early stage pale yellow with

[1] Both species belong to the family Cochlidiidæ.

pale brown eyes and palpi. It measures about three-eighths of an inch in length. The hornlike process extending above and between the eyes is prominent.

The pupal stage is passed in a cocoon (fig. 1, *g*) of rounded oval form, looking not unlike a very small puffball. It is chocolate colored, of firm, nearly parchment-like consistency, and roughened opaque on the outer surface. It measures about four-tenths of an inch in its longer diameter and three-eighths inch in the shorter.

HISTORICAL.

Among the notes of the Bureau of Entomology is one copied from Riley's notebook recording the occurrence of the larvæ on chestnut at South Pass, Ill., in August, 1869. It contains a good description of the larva, and states that it feeds on the edges of the leaves, devouring every particle as smoothly as if cut with a pair of scissors. Pupation takes place about September 20. It is worthy of note that Riley was of the opinion that the end of the lid of the cocoon was

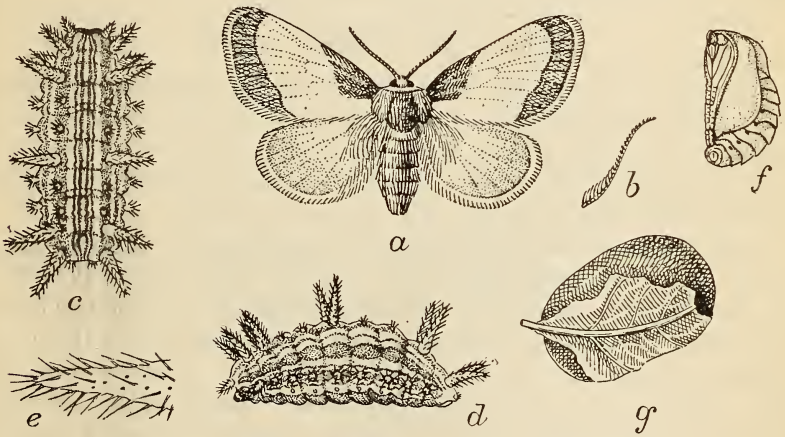

FIG. 1.—The rose slug-caterpillar (*Euclea indetermina*): *a*, Female moth; *b*, male antenna; *c*, larva, dorsal view; *d*, larva, lateral view; *e*, spine of larva, much enlarged; *f*, pupa; *g*, cocoon. All enlarged; *e*, greatly enlarged. (Original.)

cut by the larva before transformation to pupa, while it is quite obvious that the cephalic armament of the pupa is designed for that purpose, the pupa constantly wriggling around and around, thus making the perfectly circular flap.

October 7, 1883, larvæ were found feeding on oak in Virginia, and at another time feeding on paw paw when in bloom at Point of Rocks, Md.

August 3, 1889, this species was received from Vineland, N. J., where it was taken on Kansas plum.

September 3, 1896, the insect was reported feeding on the leaves of Japan plum at Barnesville, Schuylkill County, Pa.

In 1897 Dr. H. G. Dyar published a very full account of the life stages of this species and gave reference to its literature.[1] The larva appears to have been known as long ago as 1797, when Smith and Abbot figured it in connection with another species of moth to which it did not belong, namely, "*Limacodes cippus*." Under this name the species is mentioned by Harris.[2] The moth was not described until 1832.[3]

The recognized synonyms of *Euclea indetermina* are as follows: *Callochroa viridis* Reak., *C. vernata* Pack., and *Parasa chloris* Grote *et auct.* (*non* H.-S.).

As remarked by Dr. Dyar, the larvæ feed on various kinds of low-growing bushes. The list of food plants observed includes rose (*Rosa* spp.), wild cherry (*Prunus* spp.), oak (*Quercus* spp.), chestnut (*Castanea dentata*), hickory (*Carya* spp.), paw paw (*Asimina triloba*), bayberry or wax myrtle (*Myrica cerifera*), flowering dogwood (*Cornus florida*), plum, apple, and pear.

LIFE HISTORY.

The various descriptions which have been furnished of this species agree in many easily observable particulars, but differ somewhat in detail. All writers seem to agree in stating that the larvæ mature during September, but it will be noted that the specimens which were received from West Virginia had matured August 20.

Eggs are deposited during July, in small groups slightly imbricating or overlapping, and hatch in about nine days. The larvæ generally mature toward the middle of September, remaining on the underside of the leaves—something unusual considering their conspicuous coloration. The larvæ or caterpillars undergo eight distinct stages, and occasionally nine, before transforming to pupæ, and it has been observed that in stage I, which is passed rapidly, they take no nourishment. The species hibernates in its cocoon, and the moth has generally been observed to issue in July.

As to the manner of forming the cocoon in confinement, all of the cocoons reared by the writer were attached to some object. Mr. M. V. Andrews,[4] who reared hundreds of this species in confinement, states that in all cases it either forms its cocoon adherent to the stem of the food plant or, occasionally, draws two leaves together for a shelter. There appears to be a somewhat general agreement, however, that in nature the cocoons are formed on the ground among loose rubbish.

[1] Journal N. Y. Ent. Soc., vol. 5, pp. 10–14, pl. 2, 1897.
[2] Harris, T. W., Insects Injurious to Vegetation, Flint ed., 1862, p. 421.
[3] Boisduval, Cuvier's Animal Kingdom, pl. 103, fig. 8, 1832.
[4] Psyche, vol. 2, p. 271, 1879.

This species is of equal interest with the saddle-back caterpillar, with which it has been compared in previous pages, not alone on account of its beauty in all stages and its habits, but because of the urticating or stinging spines borne by the caterpillars. At the bases of these spines are glands which secrete an irritating fluid similar in its effect to that of nettles. It follows that rough handling of the caterpillars results in the breaking off of the tips of these spines, which enter the skin and release a small drop of the irritating liquid, producing a burning sensation which varies in intensity according to the person exposed.

REMEDIES.

In case only a few rosebushes or young trees are attacked, hand-picking is ample for controlling this insect, the precaution being taken to use a glove, thus avoiding being "stung." Should the caterpillars occur on several plants, and if a spraying outfit is available which may be used without danger of poisoning to human beings, a spray of Paris green or arsenate of lead may be applied.

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